Re-examination and allowance of the present application is respectfully requested.

Initially, Applicant thanks the Examiner for indicating that claims 10, 13 and 16 contain allowable subject matter, and that these claims would be allowable if they are rewritten into independent form. In view of the present amendment, Applicant believes that the respective independent claims from which objected claims 10, 13 and 16 depend are allowable over the applied art of record. As a result, Applicant has elected not to rewrite objected claims 10, 13 and 16 to place them in independent form at this time. However, Applicant expressly reserves the right to rewrite objected claims 10, 13 and 16 to place them in independent form at a later date.

Applicant respectfully traverses the 35 U.S.C. §102(a) rejection of claims 11, 12, 14 and 15 as being anticipated by U.S. Patent 5,875,039 to OHSAWA et al., hereinafter "OHSAWA". According to the present invention, as described at, for example, page 8 of Applicant's specification, the DCT coefficients are subjected to an expanded inverse discrete cosine transformation (referred to as an "expanded IDCT") by an expanded IDCT processor 22, to generate an enlarged image corresponding to an original image from a reduced image. Applicant submits that at least this feature (e.g., the expansion of an original image using an inverse orthogonal transformation) is lacking from OHSAWA.

A review of OHSAWA discloses that an interpolation process is performed to enlarge an image. Specifically, an inverse orthogonal transformation is performed to generate decoded data. Thereafter, the decoded data is subjected to the interpolation process to obtain

enlarged image data. This differs from the present invention, in which an expanded image generating processor applies an inverse orthogonal transformation to the DCT coefficients to obtain expanded image data. The present invention does not employ an interpolation process to enlarge an image, and submits that the inverse orthogonal transformation of Applicant's invention is different from that taught by OHSAWA.

Applicant further submits that claims 11, 12, 14 and 15 specify an expanded image generating processor that applies an inverse orthogonal transformation to obtain expanded image data. Thus, Applicant submits that these claims are allowable over the applied art of record without further amendment.

In view of the above, the Examiner is respectfully requested to withdraw the 35 U.S.C. §102(a) rejection of claims 11, 12, 14 and 15, and to indicate their allowability.

Applicant also respectfully traverses the Examiner's 35 U.S.C. §103(a) rejection of claims 1-9, as being obvious over OHSAWA in view of U.S. Patent 6,426,974 to TAKAHASHI et al., or U.S. Patent 5,159,468 to YOSHIDA et al.

As discussed above, the present invention employs an expanded image generating processor to apply an inverse orthogonal transformation to the DCT coefficients to obtain expanded image data. Applicant submits that at least this feature is lacking from OHSAWA. Further, Applicant submits that neither TAKAHASHI or YOSHIDA discloses or suggests applying an inverse orthogonal transformation to obtain expanded image data. Thus, Applicant submits that even if one attempted to combine the teachings of the various

references in the manner suggested by the Examiner, one would fail to arrive at the instant invention, as such a combination would not expand image data by applying an inverse orthogonal transformation to DCT coefficients. Accordingly, the Examiner is respectfully requested to withdraw the 35 U.S.C. §103 rejection, to indicate the allowability of the pending claims, and to pass this application to issue.

In this regard, Applicant herewith amend claims 11, 13, 14 and 16 in order to address certain minor formalities. Specifically, while reviewing the claims, it was noted that claims 11 and 13 refer to a fourth matrix and a fifth matrix, but do not refer to first through third matrixes. Accordingly, Applicant amends claims 11 and 13 to change "fourth" to ---first--- and "fifth" to ---second---. Similarly, claims 14 and 16 refer to sixth and seventh matrixes, without a prior reference to first through fifth matrixes. Thus, claims 14 and 16 are amended to change "sixth" to ---first--- and "seventh" to ---second---.

Applicant submits that the revisions made to the claims in the present response have been made to correct minor informalities in the claims, and not to over-come the prior art. Accordingly, the revisions to the claims should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

## SUMMARY AND CONCLUSION

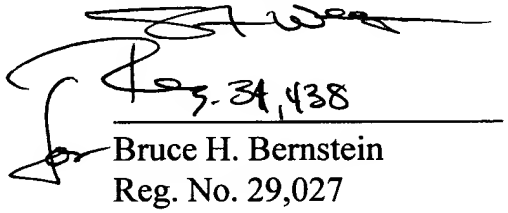
In view of the fact that none of the art of record, whether considered alone or in combination, discloses or suggests the present invention as now defined by the pending claims, and in further view of the above amendments and remarks, reconsideration of the

Examiner's action and allowance of the present application are respectfully requested and are believed to be appropriate.

Should the Commissioner determine that an extension of time is required in order to render this response timely and/or complete, a formal request for an extension of time, under 37 C.F.R. §1.136(a), is herewith made in an amount equal to the time period required to render this response timely and/or complete. The Commissioner is authorized to charge any required extension of time fee under 37 C.F.R. §1.17 to Deposit Account No. 19-0089.

If there should be any questions concerning this application, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,
Nobuaki ABE



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## APPENDIX A - MARKED UP CLAIMS

11 (Amended). A pixel number increasing apparatus, comprising:

an orthogonal transforming processor that applies an orthogonal transformation to image data arranged in a [fourth] first matrix comprised of a plurality of pixels to obtain orthogonal transformation coefficients of image data arranged in said [fourth] first matrix; and

an expanded image generating processor that applies an inverse orthogonal transformation to said orthogonal transformation coefficients to obtain expanded image data arranged in a [fifth] second matrix comprised of a greater number of pixels than said [fourth] first matrix.

13 (Twice Amended). The pixel number increasing apparatus according to claim 12, wherein said [fourth] first and [fifth] second matrixes are comprised of 8 x 8 and 64 x 64 pixels, respectively, and said expanded image generating processor obtains expanded image data by said two dimensional inverse discrete cosine transformation expressed by the following formula:

$$I_{yx}^{'(s,t)}=\frac{1}{4}\sum_{u=0}^{7}\sum_{v=0}^{7} CuCvD_{vu}^{(s,t)}\cdot COS\frac{(2x+1)uII}{128}COS\frac{(2y+1)vII}{128}$$

wherein, $0 \leq x \leq 63$, $0 \leq y \leq 63$, $I'_{yx}$ is the pixel value of expanded image data, Cu, $Cv=1/2^{1/2}$ when u, v=0, Cu, Cv=1 when u, v≠0, and $D_{vu}$ is a DCT coefficient obtained by said two dimensional discrete cosine transformation.

14 (Amended). A pixel number increasing apparatus, comprising an expanded image generating processor that applies an inverse orthogonal transformation to image data arranged in a [sixth] first matrix comprised of a plurality of orthogonal transformation coefficients to obtain expanded image data arranged in a [seventh] second matrix comprised of a greater number of pixels than said [sixth] first matrix.

16 (Twice Amended). The pixel number increasing apparatus according to claim 15, wherein said [sixth] first and [seventh] second matrixes are comprised of 8 x 8 and 64 x 64 pixels, respectively, and said expanded image generating processor obtains expanded image data by said two dimensional inverse discrete cosine transformation expressed by the following formula:

$$I_{yx}^{'(s,t)}=\frac{1}{4}\sum_{u=0}^{7}\sum_{u=0}^{7} CuCvD_{vu}^{(s,t)}\cdot\cos\frac{(2x+1)uII}{128}\cos\frac{(2y+1)vII}{128}$$

wherein, $0 \leq x \leq 63$, $0 \leq y \leq 63$, $I'_{yx}$ is the pixel value of expanded image data, Cu,

$Cv=1/2^{1/2}$ when u, v=0, Cu, Cv=1 when u, v≠0, and $D_{vu}$ is a DCT coefficient obtained by said two dimensional discrete cosine transformation.